Morocco - Fruit Tree Productivity - Rain-fed Trees Rehabilitation

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Overview

Identification

COUNTRY
Morocco

EVALUATION TITLE
Fruit Tree Productivity - Rain-fed Trees Rehabilitation

TRANSLATED TITLE
Evaluation de l'impact et des performances du projet de réhabilitation des plantations d'oliviers en zones pluviales du MCA-Maroc

EVALUATION TYPE
Independent Impact Evaluation

ID NUMBER
DDI-MCC-MAR-ME2-NORC-2013

Version

VERSION DESCRIPTION
Edited clean data for internal use only

Overview

ABSTRACT
One of the main objectives of the Agence du Partenariat pour le Progrès (APP), which is responsible for managing the MCA-Morocco compact signed in 2007 with the Millennium Challenge Corporation, was to conduct a rigorous impact evaluation of the programs established by the Compact. One of these programs is the Rehabilitation of Olive Plantations in Rain-fed Areas component of the Fruit Tree Productivity Project, for which APP contracted NORC to perform a rigorous evaluation. The impact evaluation uses an experimental design to compare farmers inhabiting areas which received the intervention (the treatment perimeters) to those which did not (control perimeters); the perimeters were randomly assigned to the treatment or control groups. To assess the causal impact of the intervention, the evaluation analyzes the differences between the treatment and control groups, as well as the change over time from the baseline period to the endline. This methodology is referred to as the "double-difference" method. The main outcome of interest for the evaluation is the change in the net agricultural income of olive farmers that can be attributed to the intervention. The estimated results of the project were drafted during the MCA-Morocco Compact development process. Olive tree rehabilitation and intensification were expected to enable an increase in net agricultural income of 15.6% by the end of the third year of implementation of the project, an increase in revenue from olive production of 29.8%, and also an increase in olive tree productivity under assumptions of actual price stability. The impact evaluation used 3 rounds of data, collected in 2011, 2012 and 2013 involving panel samples of olive farmers which this metadata file describes.

EVALUATION METHODOLOGY
Randomization

UNITS OF ANALYSIS
Farm-level

KIND OF DATA
Sample survey data [ssd]

TOPICS

Topic	Vocabulary	URI

Topic	Vocabulary	URI
Agriculture and Irrigation	MCC Sector	
Gender		

KEYWORDS
Tree rehabilitation, Farmer training, Agricultural income

Coverage

GEOGRAPHIC COVERAGE
Fès-Boulemane, Marrakech-Tensift-El Haouz, Meknes-Tafilalet, Tadla-Azilal, Tanger-Tetouan, and Taza-Al Hoceima-Taounate regions

UNIVERSE
The population covered by the data includes all farmers producing olives in the 168 perimeters under study in Morocco's regoins of Fès-Boulemane, Marrakech-Tensift-El Haouz, Meknes-Tafilalet, Tadla-Azilal, Tanger-Tetouan, and Taza-Al Hoceima-Taounate.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
NORC at the University of Chicago	NORC at the University of Chicago

OTHER PRODUCER(S)

Name	Affiliation	Role
NORC at the University of Chicago		Prime holder of the contract with APP for the impact evaluation
C&O Marketing		Local subcontractor of NORC, in charge of data collection

FUNDING

Name	Abbreviation	Role
Agence du Partenariat pour le Progres (APP)/MCA-Morocco	APP	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Review of Metadata
NORC at the University of Chicago	NORC		Metadata Producer

DATE OF METADATA PRODUCTION
2015-01-27

DDI DOCUMENT VERSION
Version 1.1 (January 2015)

DDI DOCUMENT ID
DDI-MCC-MAR-ME2-NORC-2013-v1.1

MCC Compact and Program

COMPACT OR THRESHOLD

Morocco

PROGRAM
To stimulate growth in the agricultural sector, the APP implemented the Fruit Tree Productivity Project (FTPP), the interventions of which are aimed at creating the conditions necessary for increasing the productivity and competitiveness of the fruit tree sectors and thus contributing to improved economic growth and poverty reduction in the provinces involved. They are also aimed at inducing profound transformation in the current production systems dominated by cereal farming so as to move from a traditional agriculture, which is vulnerable to variable weather conditions, to a more productive, competitive, sustainable agriculture that is integrated into national and international markets. The olive rehabilitation intervention consisted mainly of technical assistance activities: training and mentoring/oversight of farme, professional agricultural organization, and processing populations.

MCC SECTOR
Agriculture and Irrigation (Ag & Irr)

PROGRAM LOGIC
Farmers were trained in the best production and harvesting techniques with a view to increasing yields and improving the quality of their production. PAOs were also an essential component of the intervention, because they were supposed to play a key role in organizing farmers for a more effective implementation of the intervention. The objective of the intervention was to strengthen the capacities of the PAOs and to encourage them to develop in order to provide farmers with greater negotiating and selling power. Finally, because a better-quality olive oil is a key goal, the intervention provided for supervising the upgrading of a certain number of processing units, especially so they would comply with Law 28-07 on sanitary food safety and environmental protection, and setting up standard quality systems in some units and superior quality systems in others in order to ultimately obtain a better quality oil.

PROGRAM PARTICIPANTS
Farmers (olive, almond, and fig tree growers), professional agricultural organizations (PAOs), and processing units (PUs) in the Fès-Boulemane, Marrakech-Tensift-El Haouz, Meknes-Tafilalet, Tadla-Azilal, Tanger-Tetouan, and Taza-Al Hoceima-Taounate regions

Sampling

Study Population

The population covered by the data includes all farmers producing olives in the 168 perimeters under study in Morocco's regoins of Fès-Boulemane, Marrakech-Tensift-El Haouz, Meknes-Tafilalet, Tadla-Azilal, Tanger-Tetouan, and Taza-Al Hoceima-Taounate.

Sampling Procedure

The impact evaluation used an experimental design, more specifically a matched-pairs randomized design in which perimeters, which are a group of neighboring parcels representing an area of 200-250 ha created for the project, were first paired along a number of variables before a perimeter from each pair was assigned to the treatment group while the other perimeter from the pair was assigned to the control group (Note that the pairing and randomization was done by another consultant). The pairing and assignment to treatment and control groups involved a total of 142 perimeters (71 pairs) at the beginning of the project. In addition to treatment and control perimeters, it was decided to add 26 comparison perimeters which were similar to the treatment/control perimeters but hadn't satisfied all eligibility criteria for inclusion into the project. This was done such that in the event of contamination of control perimeters, the impact evaluation could turn to a quasi-experimental design. Therefore, at the beginning of the evaluation, there were 71 pairs of treatment and control perimeters (142 perimeters) plus an additional 26 comparison perimeters, for a total of 168 perimeters. By the end of the evaluation, because of contamination issues, there were 84 treatment, 58 control, and 26 comparison perimeters, of which three also received the intervention.

The sampling frame for the 168 perimeters consisted of a list of all olive farmers located in these perimeters. The number of farmers in the frame was 13,433. The listing exercise was conducted by agents of the Ministry of Agriculture and Maritime Fishing (MAPM) in 2010.

Proportional allocation was used to sample farmers from within the perimeters. The formula used was as follows: (total number of farmers in the perimeter) / (number of farmers in the sampling frame) * (required number of sampled farmers). The age of the respondents was used to sort farmers in each perimeter. Farmers were sampled using systematic random sampling from each perimeter for data collection in 2010. For perimeters with fewer than 20 farmers, all farmers in the perimeter were included in the sample in order to guarantee a sufficient number of responses for the analysis. In 2010, the sample was divided between the two data collection subcontractors: C&O Marketing and MAPM (3,088 for C&O and 1,192 for MAPM for a total of 4,280 farmers. This division was performed in such a way as to maintain representative equality at a provincial level. For the data collection in 2011, the sample consisted of the 2010 sample, dropping refusals and farmers that could not be located.

The 2012 sample consisted of the 2011 sample (panel sample) complemented by a refreshment sample. This was done by first calculating the target number of farmers in each perimeter by using a target sample size of 3,434 (2011 sample size) for all perimeters and the same formula of (total number of farmers in the perimeter) / (number of farmers in the sampling frame) * (required number of sampled farmers, 3434). Then the completed 2011 number of cases in each perimeter was compared to this new sample size to determine how many new farmers should be added to the sample. The addition of this resfreshment sample was only done for treatment perimeters. Finally for 2013, the comparison perimeters were dropped given that the experimental design had been preserved for the most part, and for budget considerations.

Note that for the purpose of the impact evaluation, the 2011 data were used as the baseline, as the intervention was delayed. Furthermore, the questionnaire had changed between 2010 and 2011 making the 2010 data less comparable to 2012 and 2013 data than the 2011 data.

The sample sizes were as follows:
2011: 3,434
2012: 3,297
2013: 2,634

The response rates for each year of the study were as follows:
2011: 87.2% for treatment, 88.6% for control
2012: 82.9% for treatment, 86.9% for control
2013: 88.3% for treatment, 89.7% for control

Deviations from Sample Design

Originally there were 71 pairs of treatment and control areas and 26 comparison areas. At the end of the program, there were 87 treatment areas, 58 control areas, and 23 comparison areas.

Response Rate

2010: 68.9%
2011: 85.1%
2012: 84.2%
2013: 88.7%

Weighting

No weighting plan.

Questionnaires

Overview

The survey questionnaires were created by experts in the sectors in question and by NORC survey specialists, and in consultation with the APP, MAPM, and other key players. The initial drafts of the questionnaires were based in part on questionnaires used in World Bank agricultural surveys and household surveys and on other questionnaires used by the Moroccan Ministry of Agriculture and Maritime Fisheries and were adapted based on the indicators of specific interest to our evaluation. The Moroccan experts in olive production, agricultural economy, rural sociology, and agricultural statistics whom NORC uses reviewed the preliminary versions of the questionnaire to verify that they were consistent with the evaluation indicators and the practices of Moroccan small farms. After revision of these preliminary versions by the APP monitoring-evaluation team and experts from the UGP and MAPM, the questionnaires were translated into Arabic to conduct pre-tests and the pilot test.

Data Collection

Data Collection Dates

Start	End	Cycle
2011-04-18	2011-07-10	Baseline 1
2012-02-16	2012-05-03	Follow-up 1
2013-01-21	2013-03-29	Follow-up 2
2010-07-05	2010-08-25	Baseline 2

Data Collection Mode

Face to face personal interview using paper and pencil questionnaire (PAPI).

Data Collection Notes

In 2010, there were six areas that were inadvertently excluded from the sampling frame: Ain Zekkour, Oulad Assemssil Maammer, Jaaouna Ain Aicha, Tizmourine-Tabouychite, Aguedal and Sidi Abderrahmane. These areas have been included in the frame from 2011. In addition, there are 9 areas of comparison that were removed from the sample. These areas were added to the sample in 2011. In 2010, there were also 41 farmers who have been eliminated from the base weighing survey as they were duplicates. These farmers were added to the sample 2011. In 2011, the sample have not been refreshed, it has only been holding fixes all cases panel of respondents in 2010. In 2010 the desired sample size was 4,454. This number was adjusted to 3,424 in 2012 to cool the sample. In 2013, all farmers in the comparison areas and farmers who have not responded either in 2011 or 2012 have been dropped from the sample.

Questionnaires

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Data Collectors

Name	Abbreviation	Affiliation
C&O Marketing		
Ministère de l’Agriculture et de la Pèche Maritime	MAPM	Morocco

Supervision

Each year, about 30 investigators participated in the data collection, with each team consisting of 4-5 investigators and 1 supervisor. Supervisors all had experience investigating and many of them had conducted investigations in rural areas. Most of them have a BAC + 3 or higher and / or equivalent experience. training rigorous supervisors also included a module on security and confidentiality to protect subjects human research in accordance with the ethical standards of NORC. Interviewer training consisted of four days of lectures and role plays, followed by a full day evaluation and testing. Only investigators who have successfully completed the daily monitoring and the last day of testing were assigned to the investigation team. The team of field investigators also included experts from the Ministry retired (qualified by the acronym DVD: Final Voluntary departures), which have considerable experience agricultural development and data collection in the field, as well as other investigators whose experience carries more on urban areas and markets. On average, a questionnaire took 60-90 minutes.

Data Processing

Other Processing

When the questionnaires arrived at the head office, they went through a coding step before being blinded using a blinding mechanism designed on SPSS Data Entry. Each questionnaire was double-entered by independent data entry agents, and any difference between the two entries was rechecked to determine the correct response.

Data Appraisal

No content available